

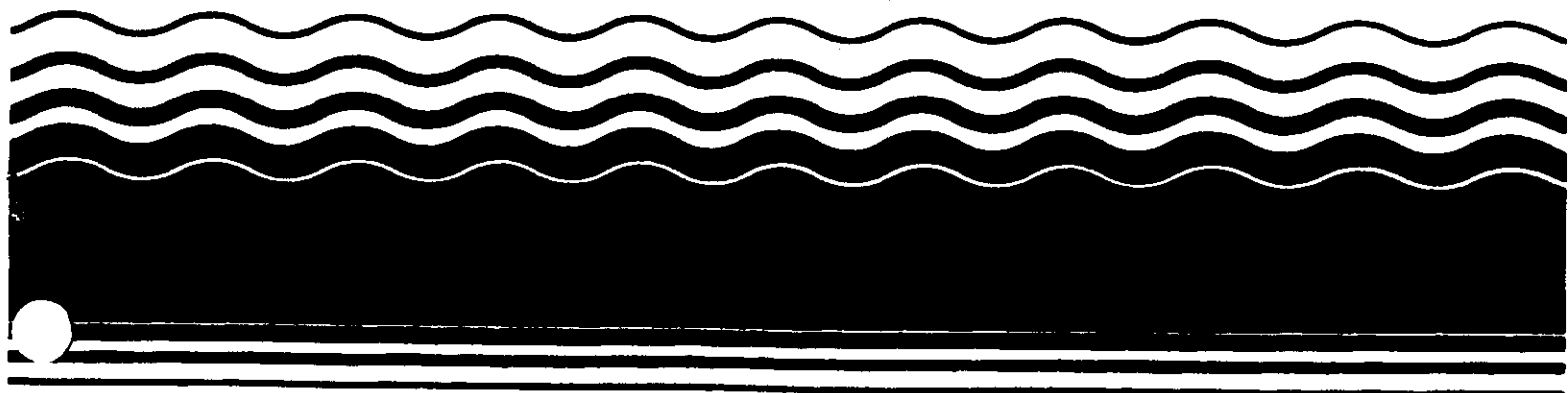
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EPA 541-R98-156

March 1999

**EPA Superfund
Record of Decision Amendment:**

**Allied Chemical & Ironton Coke
Ironton, OH
9/30/1998**



**RECORD OF DECISION AMENDMENT #3
ALLIED CHEMICAL/IRONTON COKE SUPERFUND SITE
Ironton, Ohio**

PURPOSE

This decision document, together with the Allied Chemical/Ironton Coke Record of Decision (ROD) dated December 28, 1990, the first Allied Chemical/Ironton Coke ROD Amendment dated July 31, 1995 (ROD Amendment #1), and the second ROD Amendment dated September 4, 1997 (ROD Amendment #2), presents the selected remedial action for the Allied Chemical/Ironton Coke site. The cleanup remedy for the site has been developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and Agency Policy.

It is anticipated that the State of Ohio will concur with this decision. A written confirmation is expected and will be added to the administrative record upon receipt.

BASIS

The decision to further amend the Allied Chemical/Ironton Coke ROD and ROD Amendments and select a modified remedial action is based upon the Administrative Record. The attached index lists the items that comprise the Administrative Record for ROD Amendment #3.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response actions selected in the ROD, ROD Amendments #1 and #2, and ROD Amendment #3, may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE REMEDY

The remedy selected in the 1990 ROD, 1995 ROD Amendment #1, and 1997 ROD Amendment #2 for the site is a final remedial action. The major components of the selected remedy include:

- Incineration of approximately 122,000 cubic yards of lagoon waste materials and on-site re-use of the waste heat generated during incineration.
- In-situ bioremediation of approximately 457,000 cubic yards of contaminated soil materials.
- Off-site disposal of approximately 40,000 cubic yards of contaminated soil material referenced as the "ROD Soils."

Pumping and on-site treatment of groundwater.

Downgradient groundwater monitoring of Ice Creek and preparation of a contingency plan. Implementation of deed restrictions, fencing and security.

Through ROD Amendment #3 the following components of the selected remedy are being modified:

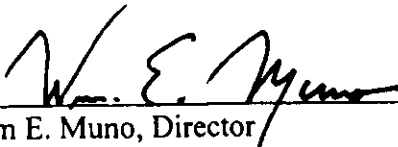
Replace in-situ bioremediation of 457,000 cubic yards of soil in Lagoons 1-4 with hot spot excavation and wetland development.

Replace incineration of Lagoon 5 materials with recycling, treatment, and/or disposal of the KO87 listed waste in an approved off-site hazardous waste facility and the use of the remaining material, excluding debris, as an alternative fuel.

STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. Hot spot excavation and wetland development of the 457,000 cubic yards of soil in Lagoons 1-4 only partially meets the requirement of reduction of toxicity, mobility, or volume through treatment. Since the soils in Lagoons 1-4 are not as contaminated as previously thought and hot spot excavation can achieve an alternate clean-up level proposed in the original ROD, as well as the beneficial contribution of wetland development to valuable ecological habitat, these changes are justified. However, the use of recycling, treatment and/or disposal of the Lagoon 5 materials does satisfy the statutory preference for treatment as a principal element of the remedy and employs permanent solutions and alternate treatment technologies to the maximum extent possible.

The remedial action selected in the ROD and by ROD Amendments #1, #2, and #3 will result in hazardous substance remaining on-site above health-based levels. Therefore, a "Five-Year Review" will be conducted after commencement of the remedial action and every five years hereafter to ensure that the remedy continues to provide protection of human health and the environment.


William E. Muno, Director
Superfund Division

9/30/98
Date

**RECORD OF DECISION AMENDMENT #3
ALLIED CHEMICAL/IRONTON COKE SUPERFUND SITE**

I. INTRODUCTION

The Allied Chemical/Ironton Coke Superfund Site, located in Ironton, Lawrence County, Ohio is approximately 95 acres in size. The site consists of a dismantled Coke Plant which operated from 1920 to 1982 and five lagoons which received process wastewater and hazardous solid waste from the former Coke Plant. Figure 1 is a map of the Coke Plant and Lagoon areas. A 4-acre waste pit called the Goldcamp Disposal Area (GDA) is also part of the site and an operating AlliedSignal Tar Plant is within the site boundaries. The Allied Chemical/Ironton Coke site is divided into two operable units, the GDA and the Coke Plant/Lagoon Area (CPLA).

The GDA Record of Decision (ROD) which describes the GDA site remedy was executed on September 29, 1988. The remedial design/remedial action (RD/RA) for the GDA is being implemented through a Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, Section 106 Unilateral Administrative Order. The Unilateral Administrative Order (UAO) was issued to AlliedSignal, Inc. and Amcast Industrial Corporation on March 9, 1989. AlliedSignal has complied with the UAO.

The CPLA RD/RA is also being performed through a CERCLA Section 106 UAO which was signed on July 1, 1991, and was issued to AlliedSignal, Inc. The CPLA remedy was finalized through the ROD signed on December 28, 1990, and subsequently amended on July 31, 1995 and September 4, 1997.

Pursuant to CERCLA Section 117 and the National Contingency Plan (NCP), Section 300.435(c)(2)(I), the United States Environmental Protection Agency (U.S. EPA) is publishing this ROD Amendment. The ROD Amendment by the U.S. EPA is a result of new information discovered during the RD/RA for the CPLA operable unit. This ROD Amendment describes a fundamental change to the CPLA ROD. A Proposed Plan was published on December 1, 1997, followed by a 30 day public comment period which ended on January 2, 1998. Only public comments in support of the proposed plan were received during the public comment period. This ROD Amendment will become part of the Allied Chemical/Ironton Coke Administrative Record (NCP 30.825(a)(2)), which is available for review at the Briggs Lawrence County Library, located in Ironton, Ohio. The information used in U.S. EPA's assessment of this change is currently available at the above repository.

II. REASONS FOR ISSUING THE ROD AMENDMENT

The remedy as described in the original ROD for the CPLA operable unit contained the following components:

- Incineration of approximately 122,000 cubic yards of lagoon waste materials and on-site

re-use of the waste heat generated during incineration, referenced as Lagoon 5 soils;

In-situ bioremediation of approximately 475,000 cubic yards of contaminated soil materials, referenced as Lagoon 1-4 soils;

Prepared pad surface bioremediation of approximately 40,000 cubic yards of contaminated soil material, referenced as the "ROD Soils";

Pumping and on-site treatment of groundwater; and

Downgradient groundwater monitoring of Ice Creek and preparation of a contingency plan. Implementation of deed restrictions, fencing, and security.

Based upon new information discovered during the pre-design and design for the CPLA operable unit, the 1995 ROD Amendment #1 made four changes to the 1990 ROD and they are as follows:

Removal of the waste heat boiler from the incineration process for Lagoon 5;

Removal of the dismantlement provision for the incinerator;

Excavate and store on-site for eventual treatment or placement into the lagoon area, 135,000 cubic yards of soils referenced as the "Site Soils"; and

Revise the cleanup standard for groundwater constituents benzo(a)pyrene and dibenz(a,h)anthracene at the GDA and CPLA from a total of 5 parts per trillion (ppt) to safe drinking water standards of 200 ppt for benzo(a)pyrene and 300 ppt for dibenz(a,h)anthracene.

Additional sampling and analysis for a group of soils classified as the ROD Soils determined that carcinogenic polynuclear aromatic hydrocarbons (PAH_c) within the ROD Soils was not as high as previously thought. The lower level of PAH_c allowed the agency to revisit the remedy for the ROD Soils. This resulted in the 1997 ROD Amendment #2 which made a single change to the 1990 ROD for the CPLA operable unit that is as follows:

Replacing prepared pad bioremediation of the approximately 40,000 cubic yards of ROD Soils with off-site disposal in an approved landfill.

ROD Amendment #3 addresses requests from AlliedSignal that the U.S. EPA revise and replace the treatment of 457,000 cubic yards of Lagoon 1-4 soils from in-situ bioremediation to hot spot excavation and wetland development and revise the treatment of 122,000 cubic yards of Lagoon 5 soils from incineration to containment. While U.S. EPA does not believe containment of Lagoon 5 is appropriate, U.S. EPA does believe that modifying the requirement to incinerate Lagoon 5 is appropriate.

In the 1990 ROD for the CPLA operable unit Lagoons 1-4 soils were required to be treated by in-situ bioremediation. Through bioremediation, naturally occurring microorganisms are used to break down the contaminants to levels which are protective of public health and the environment. Water fortified with oxygen and nutrients is distributed throughout the lagoons to accelerate the growth of the microorganisms. During the design phase for the in-situ bioremediation, sampling demonstrated that levels of PAH_c compounds were not as high as previously thought. In addition, several pilot tests indicated that achieving the 0.97 parts per million (ppm) cleanup standard established in the 1990 ROD through in-situ bioremediation would be difficult. This proposed change is based upon using the alternative wetland cleanup standard that is provided in the 1990 ROD for the CPLA operable unit. The CPLA ROD states that the cleanup standard for soil is 0.97 ppm for PAH_c. This standard was based on a direct contact exposure pathway and assumed residential land use. An alternative cleanup standard of 97 ppm for PAH_c was provided in the CPLA ROD. The CPLA ROD provided for utilization of the 97 ppm PAH_c cleanup standard if the in-situ bioremediation would not achieve the 0.97 ppm clean-up standard in a timely manner and the threat of direct contact from lagoon soils through residential land use was eliminated by flooding Lagoons 1-4 to create a wetland. An assessment of the Lagoon 1-4 area indicates that the area is more likely to be an ecological area than a residential area in the future due to its close proximity to Ice Creek and the fact that this low-lying area has historically served as a flood water storage area. AlliedSignal requested that the U.S. EPA allow utilization of the alternative cleanup standard of 97 ppm for PAH_c prior to development of the wetland. Based upon a review of the sampling data gathered from Lagoons 1-4 during design and the unlikelihood that in-situ bioremediation would achieve the 0.97 ppm cleanup standard for PAH_c, the U.S. EPA evaluated two options for the Lagoon 1-4 soils:

- In-situ bioremediation (the original selected remedy); and
- Excavation of materials above 97 ppm PAH_c ("hot spot excavation") and subsequent wetland development.

The 1990 ROD for the CPLA operable unit required incineration of approximately 122,000 cubic yards of wastes from Lagoon 5. In addition, an estimated 8,800 cubic yards of tarry soils excavated from near the former coke plant and placed on top of Lagoon 5 were to be incinerated. Based on studies during the design it was determined that Lagoon 5 contains a soft tar; a hard tar; coal/coke fines and debris. The soil boring data indicated that the soft tar, which is a listed hazardous waste (KO87) and considered by the U.S. EPA to be a principal threat at the site, was physically distinguishable from the hard tar and coal/coke fines, and was located within a discrete area of Lagoon 5. This indicates that the material in Lagoon 5 could be separated during excavation. Based upon the soil boring data and the fact that the remedy for Lagoon 5 had not yet been implemented, the U.S. EPA decided to review the remedy and proposed four options for evaluation. The four options included:

1. On-site incineration of Lagoon 5 and the tarry soils (the original selected remedy);

Construction of a RCRA Subtitle C containment cell in Lagoon 2 for the 122,000 cubic yards of material in Lagoon 5 and the tarry soils;

Recycle back to coke plants the soft tar, which is classified as KO87, with the remaining coal/coke fines and hard tar in Lagoon 5 being used as an alternative fuel. If it appears that the capacity is not available at coke plants to recycle the KO87, treatment and/or disposal of the material off-site in an approved hazardous waste facility might be necessary. The 8,800 cubic yards of tarry soils on top of Lagoon 5 will be separated by screening into three types of material (tar, debris, and product for use in cement kilns). The tar will be used as an alternative fuel. The debris, which consists of clean brick and concrete, will be placed back on-site into the excavated Lagoon 5. Additional product from the tarry soils will be sent to cement kilns for use in their processes; and

Recycle back to coke plants the soft tar (KO87) and cap the remaining material in Lagoon 5.

I. EVALUATION OF THE ALTERNATIVES

The Administrative Record, located at the Briggs Lawrence County Library, is available for review and contains the information which was used to evaluate the alternatives. In the National Contingency Plan (NCP), 40 CFR Part 300.430, the U.S. EPA has established nine criteria that assist in determining the most appropriate remedial alternative to be selected for a site. The criteria are designed to select a remedy that will be protective of human health and the environment, attain Applicable or Relevant and Appropriate Requirements (ARARs), utilize permanent solutions and treatment technologies to the maximum extent practicable, and be cost effective. The relative performance of the proposed fundamental changes mentioned above has been evaluated using the nine criteria set forth in the NCP as the basis of comparison. These nine criteria are summarized below:

Threshold Criteria

The selected remedy must meet the following threshold criteria:

Overall Protection of Human Health and the Environment addresses whether a remedy provides adequate protection and describes how risks are eliminated, reduced or controlled through treatment, engineering controls or institutional controls.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) addresses whether a remedy will attain applicable or relevant and appropriate requirements under federal environmental laws and state environmental or facility siting laws or provide grounds for issuing a waiver.

Primary Balancing Criteria

The balancing criteria are used to compare the effectiveness of the remedies.

3. **Long-term Effectiveness and Permanence** refers to the amount of risk to maintain reliable protection of human health and the environment over time once cleanup goals have been met.
4. **Reduction of Toxicity, Mobility or Volume Through Treatment** is the anticipated performance of treatment technologies that may be employed in a remedy to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
5. **Short-term Effectiveness** refers to the speed with which the remedy achieves protection, as well as the remedy's potential to create adverse impacts on human health and the environment during the construction and implementation period.
6. **Implementability** is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the chosen solution.
7. **Cost** addresses the estimated capital and operation and maintenance (O&M) costs, evaluated as the present worth cost. Present worth is the present value of the capital and future O&M costs of an alternative based on the time value of money.

Modifying Criteria

These criteria deal with support agency and community response to the alternatives.

8. **State Acceptance** indicates whether, based on its review of the FS, the previous ROD and ROD amendments, and the Proposed Plan, the support agency (in this case, the OEPA) concurs with, opposes, or has no comment on the recommended alternative.
9. **Community Acceptance** is assessed in the Record of Decision based upon a review of the public comments received on the FS report, the previous ROD and ROD amendments, and the Proposed Plan.

The nine criteria were used to evaluate and compare the options for the remediation of Lagoons 1-4 and Lagoon 5.

EVALUATION OF REMEDY FOR LAGOONS 1-4

The two options considered for remediation of Lagoons 1-4 were:

- In-situ bioremediation; and
- Excavation of materials above 97 ppm-PAH_c ("hot spot excavation") and subsequent wetland development.

Threshold Criteria

Overall Protection of Human Health and the Environment

Both options are protective of human health and the environment. If in-situ bioremediation can achieve the original .97 or the alternative 97 ppm PAH_c cleanup standard it is protective. Hot spot excavation of approximately 6,800 cubic yards of material in Lagoons 1-4 will achieve the alternative cleanup standard of 97 ppm as described in the 1990 ROD for the CPLA operable unit. In addition, wetland development as part of the excavation option will contribute to valuable ecological habitat, while continuing ecological studies will over time demonstrate protection to ecological receptors. The 97 ppm cleanup standard will also result in residual risks within U.S. EPA's acceptable risk range (1×10^{-4} - 1×10^{-6}) based on a direct contact exposure to a future resident, even though this type of land use is not reasonably anticipated in the future.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

Compliance with applicable or relevant and appropriate requirements (ARARs) must be met for each option. The original selected remedy, as described in the 1990 ROD for the CPLA operable unit, component of in-situ bioremediation, complied with all ARARs, except for those that required waivers. ARARs requiring waivers for the in-situ bioremediation, are listed in the 1990 ROD and include:

OAC 3745-57-03, Landfill Design and Operating Requirements. For in-situ bioremediation leaving hazardous waste in place does not specifically meet the requirements of this rule; and

OAC 3745-54-18, Location for Hazardous Waste Facilities. In-situ bioremediation involves leaving hazardous waste on-site in areas that do not meet Ohio's siting requirements.

For the hot spot excavation/wetland development option off-site treatment or disposal in a landfill would require compliance with the State's regulatory equivalent of RCRA 40 CFR Part 261, Toxicity Characteristics. Toxicity characteristic leaching potential (TCLP) testing and analysis will help determine the off-site treatment or disposal destination of the excavated soils. Ohio Revised Code (ORC) 3724-03 Open Burning and Dumping, OAC 3745-27-05 Authorized, Limited, and Prohibited Solid Waste Disposal Methods, and OAC 3745-54-13 general Waste Management are applicable to off-site disposal. Any fuel blending of hazardous waste conducted on-site in order to meet operational and material handling parameters for off-site treatment facilities will need to meet the substantive requirements for tanks set forth in 40 CFR Part 264 Subpart J. These regulations deal primarily with the design of the tank and require that any tank in which hazardous waste is placed must have sufficient structural integrity and corrosion protection such

that it will not rupture, collapse, or leak. If the material in the tank contains free liquid by the paint filter test, SW-846 Method 9095, the requirements under the state equivalent of §264.193 for secondary containment and leak detection systems and the requirements for ignitable wastes under §264.198 will also apply.

Off-site disposal for excavated soils which do not pass the TCLP will also require compliance with the CERCLA Off-site Rule, 40 CFR 300.440, rules for Transporters of Hazardous Waste, 40 CFR Part 263, and the Land Disposal Restrictions of 40 CFR Part 268. Waste which contains CERCLA hazardous substances or pollutants or contaminants must be managed in a U.S. EPA approved facility. If this waste is disposed of outside the United States, the rules pertaining to Export of Hazardous Waste, 40 CFR Part 262 Subpart E, will apply rather than the Land Disposal Restrictions.

Primary Balancing Criteria

3. Long-term Effectiveness and Permanence

Both options meet the requirements of Long-term Effectiveness and Permanence. Hot spot excavation will quickly reduce the PAH_c contamination to achieve the alternative 97 ppm PAH_c cleanup standard that would minimize risk to public health and the environment over the long-term. For in-situ bioremediation, even though it may be difficult, over the long-term and given enough time it may be possible to achieve either the original .97 ppm PAH_c or the alternative 97 ppm PAH_c cleanup standards. Ecological studies of the wetland restoration over time would ensure that the habitat continues to pose no ecological threat.

4. Reduction of Toxicity, Mobility or Volume Through Treatment

In-situ bioremediation fully meets the criterion for reduction of Toxicity, Mobility or Volume Through Treatment. Hot spot excavation and wetland development partially meets the criterion. Off-site disposal of excavated soils would not reduce toxicity, mobility, or volume through treatment. However, wetland development could potentially reduce low levels of contamination left after excavation by natural filtering processes occurring within the wetland.

5. Short-term Effectiveness

In-situ bioremediation is partially effective in the short-term, while hot spot excavation is an effective short term solution. Both require excavation and impacts to public health and the environment are not anticipated due to the nature of PAH_c compounds which do not volatilize into the air easily. In-situ bioremediation is considered less effective in the short-term because it will take a number of years to clean Lagoons 1-4 to either the original .97 ppm PAH_c or the alternative 97 ppm PAH_c clean-up standards. Excavation and off-site disposal is effective in the short term because it removes the contaminated soils immediately.

Implementability

Hot spot excavation and wetland development fully meets the criterion for Implementability. Excavation is known, easily applied engineering, while wetland development will require no specific technology. However, in-situ bioremediation would be more difficult to implement due to difficulty in distributing oxygen and nutrients through a series of trenches to the microorganisms in the soils. The in-situ bioremediation pilot tests conducted at the site identified this implementation problem. Results of the pilot tests indicate that in-situ bioremediation may not actually be able to achieve the original .97 ppm PAH_c or the 97 ppm PAH_c alternative cleanup standard in a timely manner.

Cost

The cost of the in-situ bioremediation is \$30 million. The cost of excavation and wetland development is \$1.2 million. The cost saving for changing the remedy from in-situ bioremediation to hot spot excavation and wetland development in Lagoons 1-4 is approximately \$29 million.

Modifying Criteria

State Acceptance

The Ohio Environmental Protection Agency (Ohio EPA) supports the hot spot excavation and subsequent wetland development in Lagoons 1-4.

Community Acceptance

Only public comments in support of the proposed plan were received during the public comment period.

EVALUATION FOR LAGOON 5 REMEDY

The four options considered for remediation of Lagoon 5 included:

1. On-site incineration of Lagoon 5 and the tarry soils;
2. Construction of a RCRA Subtitle C containment cell in Lagoon 2 for the 122,000 cubic yards of material in Lagoon 5 and the tarry soils;
3. Recycle back to coke plants the soft tar, which is classified as KO87 with the remaining coal/coke fines and hard tar in Lagoon 5 being used as an alternative fuel. If it appears that the capacity is not available at coke plants to recycle the KO87, treatment and/or

disposal of the material off-site in an approved hazardous waste facility might be necessary. The 8,800 cubic yards of tarry soils on top of Lagoon 5 will be separated by screening into three types of material (tar, debris, and product for use in cement kilns). The tar will be used as an alternative fuel. The debris, which consists of clean brick and concrete, will be placed back on-site into the excavated Lagoon 5. Additional product from the tarry soils will be sent to cement kilns for use in their processes.; and

4. Recycle back to coke plants the soft tar (KO87) and cap the remaining material in Lagoon 5.

Threshold Criteria

1. Overall Protection of Human Health and the Environment

All four options are protective of human health and the environment. By utilizing containment or excavation and treatment all four options will provide protection from contamination in Lagoon 5, containment by preventing exposure to the contaminants and excavation by removing the contaminants.

2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

Compliance with applicable or relevant and appropriate requirements (ARARs) must be met for all four options. Option 1 and 3 comply with all ARARs. Option 2 does not comply with OAC 3745-54-18, Location for Hazardous Waste Facilities. Option 4 does not comply with OAC 3745-27-07, Other Criteria for Solid Waste Disposal Facilities. Both options involve siting a containment unit in a floodplain. Because Options 2 and 4 do not comply with ARARs they will not be carried forward through the analysis.

For Options 1 and 3 off-site disposal in a landfill would require compliance with the State's regulatory equivalent of RCRA 40 CFR Part 261, Toxicity Characteristics. Toxicity characteristic leaching potential (TCLP) testing and analysis will help determine the off-site disposal destination of the excavated soils. Ohio Revised Code (ORC) 3724-03 Open Burning and Dumping, OAC 3745-27-05 Authorized, Limited, and Prohibited Solid Waste Disposal Methods, and OAC 3745-54-13 General Waste Analysis are applicable to off-site disposal. Any fuel blending of hazardous waste conducted on-site in order to meet operational and material handling parameters for off-site treatment facilities will need to meet the substantive requirements for tanks set forth in the state equivalent of 40 CFR Part 264 Subpart J. These regulations deal primarily with the design of the tank and require that any tank in which hazardous waste is placed must have sufficient structural integrity and corrosion protection such that it will not rupture, collapse, or leak. If the material in the tank contains free liquid by the paint filter test, SW-846 Method 9095, the requirements under the state equivalent of §264.193 for secondary containment and leak detection systems and the requirements for ignitable wastes

the state equivalent of §264.198 will apply.

site disposal for excavated soils which do not pass the TCLP will also require compliance with the CERCLA Off-site Rule, 40 CFR 300.440, rules for Transporters of Hazardous Waste, 40 CFR Part 263, and the Land Disposal Restrictions of 40 CFR Part 268. Waste which contains CERCLA hazardous substances or pollutants or contaminants must be managed in an U.S. EPA approved facility. If this waste is disposed of outside the United States, the rules pertaining to Transport of Hazardous Waste, 40 CFR Part 262 Subpart E, will apply rather than the Land Disposal Restrictions.

Primary Balancing Criteria

Long-term Effectiveness and Permanence

Options 1 and 3 meet the requirements of Long-term Effectiveness and Permanence. Both require excavation which will eliminate the contamination from Lagoon 5.

Reduction of Toxicity, Mobility or Volume Through Treatment

Option 1 would reduce toxicity, mobility, or volume through incineration of the materials in Lagoon 5. Option 3 would reduce toxicity, mobility, or volume through any recycling of KO87 materials and the use of the other materials as an alternative fuel.

Short-term Effectiveness

Options 1 and 3 are effective in the short-term. Engineering controls exist to control impacts to public health and the environment due to volatilization of any wastes during excavation in Options 1 and 3. Off-site recycling in Option 3 is effective in the short term because it removes the contaminated soils immediately.

Implementability

Options 1 and 3 are fully implementable. Excavation is known, easily applied engineering. Incineration is a proven technology at many sites. Recycling or off-site treatment and/or disposal facilities that can accept the materials from Lagoon 5 and currently have the capacity to handle the volume of material anticipated from Lagoon 5 exist.

Cost

Present worth costs for Option 1 are \$30.7 million. Option 3 present worth costs are \$ 9 million. The cost savings in changing the remedy for Lagoon 5 from Option 1 incineration to Option 3 recycling/alternative fuels is approximately \$22 million.

Modifying Criteria

8. **State Acceptance**

The Ohio Environmental Protection Agency (Ohio EPA) supports Option 3 for remediation of Lagoon 5.

9. **Community Acceptance**

Only public comments in support of the proposed plan were received during the public comment period.

IV. DESCRIPTION OF THE SELECTED ALTERNATIVE

The selected revision for the 457,000 cubic yards of waste material in Lagoons 1-4 includes hot spot excavation and wetland development. The hot spot excavation includes the use of an alternative cleanup standard for carcinogenic PAH_c established in the 1990 ROD for the CPLA operable unit. The 1990 ROD provided an alternative cleanup standard of 97 ppm for PAH_c if the chosen remedy of in-situ bioremediation could not achieve the original cleanup standard of 0.97 ppm in a timely manner. The selected change would achieve the 97 ppm alternative cleanup standard with hot spot excavation of approximately 6,800 cubic yards of material. Coal/coke fines and hard tar discovered during the excavation of Lagoons 1-4 will be used as an alternative fuel. Soil from the excavation will be disposed of off-site in a solid waste landfill if the material is non-hazardous. If coal/coke fines, hard tar, or soils are determined to be hazardous they will be treated and/or disposed of appropriately.

After excavation, a wetland ecology will be developed in the Lagoon area. To ensure that the material remaining after the excavation is protective of ecological receptors, a wetland development workplan and yearly ecological reconnaissance will be required.

The selected revision of the incineration of material from Lagoon 5 includes recycling of soft tar back to coke plants, incineration of hard tar, off-site disposal of hard tar and debris commingled with soft tar at an approved hazardous waste landfill, and the use of the remaining coal/coke fines as an alternative fuel. Lagoon 5 contains soft tar and hard tar along with coal/coke fines and debris. The soft tar, which is a tar decanter sludge from the coke plants, is KO87 listed waste. Pursuant to RCRA regulations, KO87 listed waste may be recycled back to coke plants. If it appears that capacity is not available at coke plants to recycle the KO87, and the soft tar cannot be recycled, it will be treated and/or disposed off-site in an approved hazardous waste facility. Hard tar will be sent to an electric utility incinerator. Prior to shipment, testing must demonstrate that the hard tar is non-hazardous through the use of the Toxicity Characteristic Leaching Potential (TCLP) test. Some hard tar may be blended on-site to meet operational and material

handling requirements of the incinerator facility. Any fuel blending of hazardous waste conducted on-site in order to meet operational and material handling parameters for off-site treatment facilities will need to meet the substantive requirements for tanks set forth in the state equivalent of 40 CFR Part 264 Subpart J. These regulations deal primarily with the design of the tank and require that any tank in which hazardous waste is placed must have sufficient structural integrity and corrosion protection such that it will not rupture, collapse, or leak. If the material in the tank contains free liquid by the paint filter test, SW-846 Method 9095, the requirements under the state equivalent of §264.193 for secondary containment and leak detection systems and the requirements for ignitable wastes under the state equivalent of §264.198 will also apply. Large debris and hard tar commingled with soft tar that does not meet the acceptance criteria of the recycling facility will be disposed off-site at an approved hazardous waste landfill. The coal/coke fines present in Lagoon 5 will be used as an alternative fuel for boilers. Prior to its use as an alternative fuel, testing must demonstrate that the fines are non-hazardous through the use of the Toxicity Characteristic Leaching Potential (TCLP) test. If the alternative fuel is hazardous, it will be treated and/or disposed in an approved hazardous waste facility. Uncontaminated brick and concrete uncovered during the excavation of Lagoon 5 will be used as clean fill in Lagoon 5. Other types of debris discovered during the excavation will be disposed off-site in an approved landfill.

The 8,800 cubic yards of tarry soils on top of Lagoon 5 will be separated by screening into three types of material (tar, debris, and product for use in cement kilns). The tar will be used as an alternative fuel. The debris, which consists of clean brick and concrete, will be placed back on-site into the excavated Lagoon 5. Additional product from the tarry soils will be sent to cement kilns for use in their processes. Other types of debris excavated from Lagoon 5 will require disposal off-site in a landfill. The 30,000 cubic yards of site soils which was excavated near the former coke plant will also be placed in the Lagoon 5 excavation to achieve grade for the wetland development.

V. STATUTORY DETERMINATIONS

The off-site transport and disposal of waste containing hazardous materials without treatment is the least favored alternative remedial action where practicable treatment technologies are available. Based upon new information that the materials in Lagoons 1-4 are not as contaminated as previously thought and that the bioremediation will not achieve clean-up in a timely manner, changing the remedy for Lagoons 1-4 to hot spot excavation and wetland development is justified. Hot spot excavation is readily implementable and will achieve the alternate cleanup standard identified in the 1990 ROD for the CPLA operable unit in a substantially shorter timeframe than bioremediation.

The remedial options for lagoons 1-4 are roughly equivalent in complying with the nine criteria, with the selected option slightly preferable. Both are protective and comply with ARARs. While the hot spot excavation and wetland development only partially meets the criteria for Reduction of Toxicity, Mobility, and Volume Through Treatment, the removal, off-site disposal,

and wetland development are effective technologies that are readily implementable as opposed to in-situ bioremediation, which is difficult to implement and, based on pilot studies, questionably effective. In addition, cost savings associated with the change are substantial, with the hot spot excavation and wetland development potentially more effective in reducing contamination at a reduced cost.

For Lagoon 5 waste material, the incineration and recycling/alternative fuels options fully meet all the criteria and are comparable; however, the recycling/alternative fuels option is easier to implement, can be completed in a timeframe that is two years shorter than incineration, and result in a cost savings of over \$20 million. The recycle option also treats and disposes of the Lagoon 5 material off-site which is easier to implement than incineration on-site. Therefore, modifying from the incineration option to the recycling/alternatives fuels option is justified.

Off-site disposal and treatment of soils from Lagoons 1-5 is protective of human health and the environment since the soils will be managed in approved facilities. Remaining soils will meet the PAH_c alternative cleanup standard or be at a depth which will not affect human health or the environment. The use of recycling, treatment and/or disposal of the Lagoon 5 materials does satisfy the statutory preference for treatment as a principal element of the remedy and employs permanent solutions and alternate treatment technologies to the maximum extent possible.

Compliance with ARARs, specifically the State equivalent of RCRA 40 CFR Part 260 to 271, ORC 3734-03, OAC 3745-27-05, and OAC 3745-54-13 will be met with off-site disposal of the Lagoon soils. Disposal of soils containing CERCLA hazardous substances must meet the CERCLA Off-Site Disposal Rule, 40 CFR 300.440 and the Land Disposal Restrictions, 40 CFR Part 268. If this waste is disposed of outside the United States, the rules pertaining to Export of Hazardous Waste, 40 CFR Part 262 Subpart E, will apply rather than the Land Disposal Restrictions. In addition, any fuel blending of hazardous waste conducted on-site in order to meet operational and material handling parameters for off-site treatment facilities will need to meet the substantive requirements for tanks set forth in the state equivalent of 40 CFR Part 264 Subpart J. These regulations deal primarily with the design of the tank and require that any tank in which hazardous waste is placed must have sufficient structural integrity and corrosion protection such that it will not rupture, collapse, or leak. If the material in the tank contains free liquid by the paint filter test, SW-846 Method 9095, the requirements under the state equivalent of §264.193 for secondary containment and leak detection systems and the requirements for ignitable wastes under the state equivalent of §264.198 will also apply. The two changes outlined in ROD Amendment #3 could result in a total savings of approximately \$50 million.

VI. DOCUMENTATION OF SIGNIFICANT CHANGES

One of the provisions of the Proposed Plan for ROD Amendment #3 addressed the type of treatment for the material from Lagoon 5. Some of the material in Lagoon 5, specifically the soft tar, KO87, has been identified by the U.S. EPA as a principal threat, and the preference is for treatment of these materials. The Proposed Plan recommended the recycling of soft tar back to

ke plants and the use of the remaining coal/coke fines and hard tar as alternative fuel. The proposed Plan also identified that, if the soft tar could not be recycled, due to capacity at coke plants or other reasons, the soft tar would be treated and/or disposed off-site in an approved hazardous waste facility.

During the development of ROD Amendment #3, the potentially responsible party pursued contracting for the recycling option as well as incineration (offsite or onsite) of the KO87 soft tar waste. The contracting activities determined that the capacity of the facilities which could accept soft tar was so limited that recycling could take from 4 to 6 extra years to complete and that incinerating the soft tar could take from 2 to 2 ½ extra years to complete. As a result, soft tar would need to be stored on site for long periods, and the completion of the remedy would be substantially delayed. In addition, the potential high ash content of the soft tar due to its mixing with other debris in the Lagoon 5 landfill, resulted in many of the off-site recycling and commercial incinerator hazardous waste facilities being unable to accept the material because of air quality specifications. As a consequence, U.S. EPA estimates that a portion of the soft tar cannot actually be recycled.

To examine recycling and treatment options further the responsible party excavated about 20 yd³ of soft tar material from Lagoon 5 to have it analyzed by the few recyclers and treatment facilities that expressed interest in accepting the materials. During the excavation it was discovered that separating the soft and hard tar was more difficult than originally anticipated. However, the responsible party was able to separate a variety of relatively unique waste streams and examined treatment and disposal options for each. The waste streams included: "clean" soft tar, which is primarily KO87 hazardous waste; non-commingled hard tar; large debris commingled with KO87; "dirty" soft tar, which is KO87 waste mixed with hard tar, coal/coke fines, and ash; and coal/coke fines. Treatment and disposal options included: the Acme Recycling Center, a coke oven in Chicago, Illinois; a commercial cement kiln incinerator called Giant Resource Recovery Co.; a non-hazardous electric utility incinerator called Baldwin Thermal Treatment in Baldwin, Illinois; Safety Kleen (Laidlaw) landfill in Corunna, Canada; and alternative fuel sources for the coal/coke fines. Representatives from these facilities visited the Ironston site to perform on-site inspections and collect waste profiles. After visiting the site, Giant Resource Recovery was eliminated as an option because their acceptance criteria and quality requirements could not be met by the materials present in Lagoon 5.

After receiving feedback from each of the potential disposers, a receptor for each waste stream was identified. "Clean" soft tar, which is KO87 waste that meets the acceptance criteria and quality requirements to be recycled for use in coke ovens, will be shipped to Acme. The only limiting factor is the capacity of the recycler to accept the waste. If the recycler's capacity is delaying the excavation, "clean" soft tar will be disposed at Laidlaw in Canada until the issues are resolved. Non-commingled hard tar will be sent to Baldwin. Prior to shipment, testing must demonstrate that the hard tar is non-hazardous through the use of the Toxicity Characteristic Leaching Potential (TCLP) test. Some hard tar may be blended on-site to meet operational and material handling requirements of the incinerator facility. Large debris

commingled with KO87 will be sent to Laidlaw. "Dirty" soft tar will be sent to Acme unless it does not meet their acceptance criteria and quality requirements, i.e. fine contents and debris size, in which case it will be disposed off-site at Laidlaw. Coal/coke fines, which is the bulk of material in Lagoon 5, as mentioned previously, will be used as an alternative fuel. Presently, there are a number of facilities interested in and have the capacity to handle the coal/coke fines.

The ARARS for this modification of ROD Amendment #3 remain those described in the discussion of ARARS for that ROD Amendment.

Therefore, U.S. EPA is clarifying the remedy selected in ROD Amendment #3 to off-site recycling of the "clean" soft tar at the Acme facility. Hard tar will be treated off-site at the Baldwin facility. Coal/coke fines will be used as an alternative fuel. The remaining material including large debris commingled with KO87 waste and "dirty" soft tar which fails to meet the specifications for recycling will be disposed off-site in compliance with State and Federal hazardous waste regulations. It is currently anticipated that this last category of material would be sent to a facility operated by Laidlaw Corporation in Corunna, Canada. As part of the off-site disposal at the Canadian facility, following stockpiling of the material, samples will be collected for analytical testing for parameters required by the disposal facility. These tests will be performed to determine a 15 psi penetration. This is a compressibility standard established by the facility to aid in material placement options. It may become necessary to stabilize the material to meet the compressibility standard and because at different times during the removal of the soft tar handling the material may be difficult due to warm weather and fluidity of the tar. Cement or fly ash will be added as a stabilizing agent. The stabilization will generally be performed in the lagoon area; however, it may become necessary to perform the mixing process in vessels near where the soft tar material will be stockpiled for shipment.

This modification in the selected remedy will not fundamentally alter the selected remedy with respect to scope, performance or cost. The same amount of soft tar, hard tar, and coal/coke fines will be removed from Lagoon 5 and managed off-site. Lagoon 5 will still be excavated, some soft tar will be recycled, the hard tar will still be treated, coal/coke fines will still be used as an alternative fuel, and uncontaminated debris will still be used either in cement kilns or placed back on-site into the excavated Lagoon 5, as approved in ROD Amendment #3.

Although the off-site disposal of some of the soft tar only partially meets the criteria for reduction of toxicity or volume through treatment, it does provide greater short term effectiveness and is more implementable than recycling and incineration. The requirements for off-site disposal can be easily met, eliminating concerns with the "quality" of the soft tar and its acceptability at a recycling facility. In addition, the schedule for completion of the selected remedial action will be maintained. The modification to off-site disposal is in compliance with ARARs and the State of Ohio has been informed of the modification and concurs. On-site blending of hard tar to meet operation and material handling requirements of the off-site incinerator will meet the substantive requirements of the state equivalent of 40 CFR Part 264 Subpart J. Overall cost and timeframes of the project are hard to estimate given the various

waste streams and treatment/disposal options. Some recent figures submitted by the PRP which examined the costs of incineration, recycling, or off-site disposal of just the soft tar material ranged from \$5.9 million for the off-site disposal to \$8.1 million for incineration. Costs are expected to fall within this range. Timeframes were also examined and ranged from 13 months to complete to 2 years for the incineration and over 5 years for the recycling option. Timeframes are expected to fall between 13 months and 2 years.

Information pertaining to this modification will become part of the administrative record file located at Briggs Lawrence County Library, located in Ironton, Ohio.

**U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION**

**ADMINISTRATIVE RECORD
FOR
ALLIED CHEMICAL/IRONTON COKE SUPERFUND SITE
IRONTON, LAWRENCE COUNTY, OHIO**

**OPERABLE UNIT #2: COKE PLANT/LAGOON AREA
UPDATE #9**

DECEMBER 3, 1997

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	00/00/00	AlliedSignal, Inc.	U.S. EPA	Drawing: Ironton Coke Plant Lagoon No. 5 Field Characterization: Visual Analysis of Tar Materials	1
2	00/00/00	AlliedSignal, Inc.	U.S. EPA	Drawing: Ironton Coke Plant Lagoon No. 5 Field Characterization: Boring Locations	1
3	00/00/00	AlliedSignal, Inc.	U.S. EPA	Drawing: Ironton Coke Plant Lagoon No. 5 Field Characterization: Benzene Analysis of Materials	1
4	00/00/00	AlliedSignal, Inc.	U.S. EPA	Drawing: Ironton Coke Plant Lagoon No. 5 Field Characterization: Proposed Boring Locations	1
5	00/00/00	AlliedSignal, Inc.	U.S. EPA	Drawings: Ironton Coke Plant Lagoon No. 5 Boring Locations; Visual Analysis of Tar Materials; HNU Analysis Of Materials; Benzene Analysis of Materials	4
6	00/00/00	U.S. EPA	File	Outline re: Removal Options and Criteria at the Allied Chemical/Ironton Coke Site	1
7	06/22/92	Federal Register	Public	40 CFR Parts 261, 266, and 271: Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Exclusions; Final Rule (FR: Vol. 57, No. 120; pp. 27880-27888)	10

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8	08/18/92	Federal Register	Public	40 CFR Parts 261 et al: Identification and Listing of Hazardous Waste; CERCLA Hazardous Designation; Reportable Quality Adjustment; Coke By-Products Waste (FR: Vol.57, No. 160; pp. 37284-37306)	24
9	08/09/96	Lewis, M., AlliedSignal, Inc.	Alcamo, T., U.S. EPA and K. Gilmer, Ohio EPA	Letter: K087 Remediation Alternative Costs for the Coke Plant/Lagoon Area Operable Unit at The Allied Chemical/Ironton Coke Site	4
10	08/23/96	Ford, R., AlliedSignal, Inc.	Alcamo, T., U.S. EPA and K. Gilmer, Ohio EPA	Letter re: Allied's Request for U.S. EPA/OEPA's Review of Attached Petition to Amend the Record of Decision for the Ironton Coke Plant CP/LA Operable Unit	20
11	09/30/96	Ohio EPA	U.S. EPA	Construction and Demolition Debris Rules (Chapters 3745-37 and 3745-400 of the Ohio Administrative Code)	108
12	11/11/96	Lewis, M., AlliedSignal, Inc.	Alcamo, T., U.S. EPA and K. Gilmer, Ohio EPA	Letter Forwarding Attached Drawing re: Conceptual Design of a Hazardous Waste Cell in Lagoon 4 at the Allied Chemical/Ironton Coke Site	2
13	11/13/96	Lewis, M., AlliedSignal, Inc.	Alcamo, T., U.S. EPA and K. Gilmer, Ohio EPA	Letter re: Access Road Between the Cell and Floodwall Berm at the Allied Chemical/Ironton Coke Site w/Attached Drawing	2
14	11/21/96	Ford, R., AlliedSignal, Inc.	Alcamo, T., U.S. EPA and K. Gilmer, Ohio EPA	Letter Forwarding Attached Table re: Cost Estimates for Lagoon 5 Options at the Allied Chemical/Ironton Coke Site	2

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11/21/96	Ford, R., AlliedSignal, Inc.	Alcamo, T., U.S. EPA and K. Gilmer, Ohio EPA	Letter Forwarding Attached Table re: Carcinogenic PAH Levels within Lagoons 1-4 at the Allied Chemical/ Ironton Coke Site	16
12/13/96	Ford, R., AlliedSignal, Inc.	Alcamo, T., U.S. EPA and K. Gilmer, Ohio EPA	Letter Forwarding Attached Drawing re: Proposed Lagoon 5 Area Cell at the Allied Chemical/Ironton Coke Site	3
01/09/97	Dewis, M., AlliedSignal, Inc.	Alcamo, T., U.S. EPA	Cover Letter Forwarding Boring Logs, Trench Logs, Boring and Trench Location Drawing and Photographs from the August 1993 WFR Predesign Investigation at the Allied Chemical/Ironton Coke Site	2
01/17/97	Arbesman, P., AlliedSignal, Inc.	Muno, W., U.S. EPA	Letter re: Allied's Petition to Amend the Record of Decision for the Allied Chemical/ Ironton Coke Site	1
02/20/97	AlliedSignal, Inc.	U.S. EPA	Drawing: Proposed Sampling Locations for the Lagoon Materials Delineation Program at the Allied Chemical/ Ironton Coke Site	1
03/13/97	U.S. EPA	File	Outline of Proposed Lagoon 5 Field Charac- terization at the Allied Chemical/Ironton Coke Site (DRAFT)	2
03/14/97	International Technology Corporation	U.S. EPA	Letter Forwarding Attached Draft Lagoon Materials Delineation Workplan for the Coke Plant/Lagoon Area at the Allied Chemical/ Ironton Coke Site	8

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22	03/31/97	Shott, D., International Technology Corporation	Alcamo, T., U.S. EPA and K. Gilmer, Ohio EPA	Letter Forwarding Attached (1) Revised Page 1 and (2) Revised Figure 1: Proposed Sampling Locations for the Draft Lagoon Materials Delineation Workplan for the Allied Chemical/Ironton Coke Site	3
23	06/23/97	Ford, R., AlliedSignal, Inc.	Alcamo, T., U.S. EPA and K. Gilmer, Ohio EPA	Letter Forwarding Attached (1) Revised Table 3: Lagoon 1-4 Sample Points and (2) Sample Location Map for the AlliedSignal Coke Plant/Lagoon Area Site	8
24	07/15/97	Alcamo, T., U.S. EPA	Ford, R., AlliedSignal, Inc.	Letter re: the Lagoon Area Carcinogenic Poly- Nuclear Aromatic Hydro- Carbons (PAH) Data Table for Lagoons 1-4 at the Allied Chemical/Ironton Coke Site	2
25	08/13/97	Shott, D., International Technology Corporation	Alcamo, T., U.S. EPA and K. Gilmer, Ohio EPA	Letter Forwarding Attached Revised PAH Data Table and Sample Location Map for the Allied Signal Coke Plant/Lagoon Area Site	7
26	08/28/97	Shott, D., International Technology Corporation	U.S. EPA	Letter Forwarding Attached Summary of Data from the May-June 1997 Lagoon No 5 Field Characterization Program at the Allied Chemical/ Ironton Coke Site	23
27	10/03/97	Alcamo, T., U.S. EPA	Gilmer, K., Ohio EPA	Letter re: Tar Decanter Sludge (K087) within Lagoon 5 and Different- iating Between Hard Tar and Soft Tar at the Allied Chemical/Ironton Coke Site	3
28	10/14/97	Lewis, M., AlliedSignal, Inc.	Alcamo, T., U.S. EPA and K. Gilmer, Ohio EPA	FAX Transmission Forwarding Attached October 7, 1997 Draft Meeting Notes re: AlliedSignal/Ironton Coke Site	4

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10/27/97	Lewis, M., AlliedSignal, Inc.	Alcamo, T., U.S. EPA and K. Gilmer, Ohio EPA	Letter re: Tarry Soils Pile at Lagoon 5 at the Allied Chemical/Ironton Coke Site	2	29
10/28/97	Ford, R., AlliedSignal, Inc.	Alcamo, T., U.S. EPA	Letter re: Origin of Waste Tar in Lagoon 5 at the Allied Chemical/ Ironton Coke Site	1	30
10/29/97	Lewis, M., AlliedSignal, Inc.	Alcamo, T., U.S. EPA and K. Gilmer, Ohio EPA	EPA Transmission Forwarding Attached Table re: Summary of Hazardous Characteristic Testing for Tarry Soils at the Allied Chemical/ Ironton Coke Site	2	31
11/04/97	Moschell, M., Ohio EPA	Gilmer, K., Ohio EPA	Memorandum re: Allied's Hazardous Waste Determin- ation for Hard Tar at the Allied Chemical/ Ironton Coke Site	1	32
11/05/97	Shott, D., International Technology Corporation	Alcamo, T., U.S. EPA and K. Gilmer, Ohio EPA	Letter re: Summary of the May 27 - June 12, 1997 Lagoon No. 5 Field Characterization Program at the Allied Chemical/ Ironton Coke Site	3	33
11/10/97	Muno, W., U.S. EPA	Arbesman, P., AlliedSignal, Inc.	Letter re: U.S. EPA's Review of Allied's August 23, 1996 Petition to Amend the December 1990 Record of Decision for the Coke Plant/ Lagoon Area at the Allied Chemical/Ironton Coke Site	5	34
12/01/97	Lewis, M., AlliedSignal, Inc.	Alcamo, T., U.S. EPA and K. Gilmer, Ohio EPA	Letter re: Estimated Costs for the Allied Chemical/Ironton Coke Site w/Attached Lagoon No. 5 Proposed Final Grading Plan Drawing	2	35

U.S. ENVIRONMENTAL PROTECTION AGENCY

ADMINISTRATIVE RECORD
FOR
ALLIED CHEMICAL/IRONTON COKE SITE
OPERABLE UNIT #2
IRONTON, LAWRENCE COUNTY, OHIO

UPDATE #10
SEPTEMBER 29, 1998

<u>NO.</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
1	12/00/97	U.S. EPA	Public	Fact Sheet: Proposed ROD Amendment #3 for the Allied Chemical/ Ironton Coke Site	12
2	07/21/98	Hunt, M., AlliedSignal, Inc.	Mankowski, M., U.S. EPA	Letter re: Lagoon 2/5 Remediation at the Allied Signal/Ironton Coke Site w/ Attachments	21
3	09/16/98	Hunt, M., AlliedSignal, Inc.	Mankowski, M., U.S. EPA	Letter re: Lagoon 2/5 Remediation (Tar Excava- tion/Disposal) at the AlliedSignal/Ironton Coke Site w/ Appendices I-XI)	90
4	00/00/00	U.S. EPA	Public	Record of Decision Amend- ment for Operable Unit #2 at the Allied Chemical/ Ironton Coke Site (PENDING)	